

## [Detailed Description of the Invention]

[0001]

[The technical field to which this invention belongs] This invention is memorized with the image data obtained as a result of photoing information, including the specification concerning work in the work situation in a construction site or a manufacture factory, a situation, etc., is carried into a computer and relates to the digital camera system for work record which creates an album and an image database and is utilized.

[0002]

[Description of the Prior Art]In digital camera systems for work management, such as a construction photograph managerial system using the conventional digital camera, The photoed image data was transmitted to the computer, the index (photography information) was inputted, looking at image data on a computer, the image database was built and the album etc. were created. It is what photograph, or in order to enable it to check later, photography information is written to boards, such as a blackboard, at the time of photography, and it copies in a photograph, and is \*\*\*\*\*.

[0003]

[Problem(s) to be Solved by the Invention]Such a conventional system has the following faults.

- 1) The work which attaches an index occurs looking at image data after transmitting image data to a computer from a digital camera, and require a labor very much.
- 2) When attaching an index to image data, it may not understand anymore in what photoed what.
- 3), when the photography information over it may be taken to a memo and an image database and an album are created, whenever it takes a photograph, and which memo may not be clear anymore corresponding to [ it is very troublesome and ] which photograph.
- 4) In order to prevent what reservation of the credibility of the photoed image data and what photograph it is do not understand anymore, may write photography information in boards, such as a blackboard, and may take means to take a photograph simultaneously, but. It is not only very troublesome work, but when there is a photographic subject far away, decipherment of the character written to the board may become difficult.
- 5) Don't provide a means to prevent a failure to photograph. Construction photographs will become a serious problem if a failure to take is carried out, and if a photography person is very \*\*\*\*\* et al. about a nerve, there is. [ no ]
- 6) It cannot be said that it is also possible to understand and \*\* to have transposed advanced \*\*\*\*\* for image processing software in recent years, for example, the copied board, to the board of another photograph, and to have altered it, and the high credibility as documentary photography is secured.

This invention is invented in order to cancel the problem of a system conventionally [ such ].

[0004]

[Means for Solving the Problem]Composition of this invention establishes a means to transmit information about a (b)-taken photograph, i.e., photography information, to a digital camera from a computer.

(\*\*) Establish a means to display the aforementioned photography information on a display on said digital camera so that a photography person can check.

(\*\*) Establish a means to associate and memorize a pointer indicating said photography information or photography information on said computer, and photoed image data to said digital camera.

(\*\*) Said image data memorized by said digital camera, said photography information, or said pointer is transmitted to a computer, Photography information is made into a search key and data processing, such as said image data of creating an image database or creating an album which made photography information an explanatory note of image data, and arrangement of said photography information, is performed. \*\*, \*\* and others It is an input means in which an input and correction are possible on a digital camera about (\*\*) photography information. A means to encipher and record photography information on image data using alteration prevention means, such as a \*\* (\*\*) electronic watermark. It takes as additional composition. The above composition is taken in this invention.

Therefore, it is what cancels all for a fault of a system conventionally [ said ], Take a photograph for work record in a construction site of a product inspection photograph [ in / it can do and / a form photograph or a manufacture factory ], a process progress check photograph, etc., without installing boards, such as a blackboard, prevent a failure to photograph, and creation of an album or an image database is easy, And a digital camera system for work records which can give credibility high as documentary photography is provided.

[0005]

[Mode for carrying out the invention]A case where it applies to public works photograph management as an example is explained. First, the image database 5 is created to the computer 2. In this case, each component of the image database 5 assumes that it has the structure of the photography information table 1. A user inputs photography information according to the photography information table 1 corresponding to each photograph taken after this using the database manager 7. Here, each item except the actual measurement H, the actual measurement L, and a graphics file name of the photography information table 1 is inputted. A schematic illustration filename shows a file which keeps a schematic illustration of a civil engineering structure to be photoed from now on among items to input, and it is a design size of a portion in which the designed value H and the designed value L have said schematic

illustration. These input what was created by a CAD system etc. Incidentally, the actual measurement H and the actual measurement L which are the items which are not inputted at this time are an actual dimension to said designed value H and the designed value L, and input an actual measurement result in a spot. A graphics file name is a file which keeps image data of a photoed civil engineering structure, and is inputted after photography with a digital camera. Input operation of the image database 5 in the computer 2 is once ended above. Next, photography information inputted by computer is transmitted to the digital camera 3, and how to display is explained. A user transmits each photography information corresponding to each photograph to be taken from now on memorized by the database 5 using the communications control module 6 of the computer 2 to the digital camera 3 via the means of communication 4. Said each \*\*\*\*\* information received by the communications control module 9 of the digital camera 3 is memorized by the memory measure 10. Said each photography information is sent to the displaying means 11, and the photography list screen 15 is displayed on the displaying means 11. At this time, main items are displayed on the photography list screen 15 among said each photography information. It is \*\*\*\*\* , when the digital camera 3 is operated and one is chosen on the photography list screen 15. The news screen 16 is displayed on the displaying means 11. The text display screen 19 which displays text data of the schematic illustration display screen 18 which displays a schematic illustration which is one of the contents of the photographic subject image display screen 17 through a lens of the digital camera 2 and photography information, and photography information is expressed as the photography information screen 16. Incidentally this schematic illustration displays the contents of the schematic illustration file created by a CAD system of the computer 2, etc. Thus, the user can check each photography information that it inputted by computer to a photographic subject which should photograph, by the displaying means 11 of the digital camera 3. Next, how to input an actual dimension of a civil engineering structure which is a photographic subject with the digital camera 3 is explained. A user checks a measurement part of an actual dimension of a civil engineering structure which is a photographic subject, seeing the photography information screen 16, and inputs the inner actual measurement H and the actual measurement L of photography information by the input means 12 of the digital camera 3. Additional memory of these is carried out at corresponding photography information which exists in the memory measure 10. what the input means 12 corrects for other photography information that it was inputted by computer currently displayed on the displaying means 11 -- being also alike -- it is usable. Next, a photographic subject is photoed with the digital camera 3, and how to memorize image data and photography information simultaneously is explained. A user checks a civil engineering structure which should be photoed, seeing the photography information screen 16. And a civil engineering structure which is a photographic subject is photoed by the conversion-to-signals means 13. A photograph is taken by the conversion-to-

signals means 13, and generated image data is transmitted to the alteration prevention means 14 with said photography information. In the alteration prevention means 14, said photography information is enciphered and recorded on said image data by a method with a difficult alteration of an electronic watermark etc. Since a key for [ in this case ] carrying out encryption record knows only a digital camera of this system and the user cannot know, it is very difficult to rewrite photography information recorded on image data. Photography information recorded since a key for on the other hand reading photography information was opened to anyone can be read easily. Next, image data which carried out encryption record of the photography information is transmitted to the memory measure 10. At this time, a pointer in the memory measure 10 of said image data is inputted into a graphics file name in said photography information. When not performing prevention from an alteration of photography information, said image data is directly transmitted to the memory measure 10 from the conversion-to-signals means 13 without an alteration prevention means. By repeating an input and photography of an actual dimension of a civil engineering structure as mentioned above, photography is completed to all the photography information transmitted to the digital camera 3. Next, each photography information memorized by the memory measure 11 of the digital camera 3 is transmitted to the computer 2, and how to reflect in the image database 5 is explained. Each photography information and image data which were memorized by the memory measure 10 of the digital camera 3 are transmitted to the communication control means 6 of the computer 2 via the means of communication 4. The database manager 7 has the received photography information, and updates a component in which the image database 5 corresponds. In this case, in a component of the database 5, a graphics file which includes the contents of received image data in a graphics file name of photography information is generated and inputted. It is displayed as the database manager 7 shows an image database to the image database display screen 20 as an example. As mentioned above, a component of the image database 5 is added at any time by computer 2, image data, an actual measurement, etc. are inputted after reception with the digital camera 3, and an image database is completed by returning a computer. When photography information corresponding to image data is enciphered and recorded with an element of this image database, [ the contents of corresponding photography information ] [ as change being temporarily possible on a database ] Since it is not in agreement with photography information enciphered, changing invalid is easily controllable by a database manager. Since photography information currently recorded on image data with other applications can be easily read by an open key, in submitting a construction photo album to an order person with electronic data etc., it can secure high credibility. If an image database is completed, it is possible to create a construction photo album at very easy work. For example, image data required of the database manager 7 is searched using form of the photography information table 1, and image data and

photography information which should be outputted are checked. Next, each retrieved photography information is transmitted to the album creation module 8. By an album creation module, according to a predetermined format, image data, schematic illustration data, and text data of photography information are arranged, and it outputs to printing thru/or electronic media. Creation of a construction photo album is completed by carrying out about all photography information that searched this.

[0006]

[Effect of the Invention]

[Claim 1]According to the invention of \*\*\*\*\* Claim 1, arrangement of documentary photography can be performed very simply. That is, there is no clear [ anymore / what was photoed by losing troublesome work which attaches an index, looking at image data in a computer ] peach. Photography information can be written in boards, such as a blackboard, the necessity of doing troublesome work photoed simultaneously does not have \*\*, either, a failure to take can also be prevented, and an image database, an album, etc. can be created efficiently.

[Claim 2]According to the invention of \*\*\*\*\* Claim 2, an input of measured value in the spot is possible, and it is not necessary to take a memo independently by an input function. Correction of other photography information is possible, and it is OK, even if it makes a mistake by computer and inputs photography information.

[Claim 3]According to the invention of \*\*\*\*\* Claim 3, an alteration of that photography information is enciphered and recorded on image data and photography information is difficult, and considers it as documentary photography, and high credibility can be secured.

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[Brief Description of the Drawings]

[Drawing 1]The lineblock diagram of photography information showing one example of this invention.

[Drawing 2]The system structure figure by this invention

[Drawing 3]The internal functional lineblock diagram of a computer and a digital camera by this invention

[Drawing 4]The example of a display of the photography list screen displayed on the digital camera by this invention

[Drawing 5]The example of a display of the photography information screen displayed on the digital camera by this invention

[Drawing 6]The example of a display of the image database on the computer in which one example of this invention is shown

## [Explanations of letters or numerals]

1 -- a photography information table -- 2 -- computer 3 -- digital camera 4 -- a means of communication

As for 5, image database 6 is a communication control means of a computer.

As for 7, database manager 8 is an album creation system.

As for communication control means 10 of a digital camera, in 9, memory measure 11 is a displaying means.

As for picture generation means 13, in 12, input means 14 is an alteration prevention means.

As for 15, photography list screen 16 is a photography information screen.

17 is a photographic subject image display screen.

18 is a schematic illustration display screen.

19 is a text data display screen.

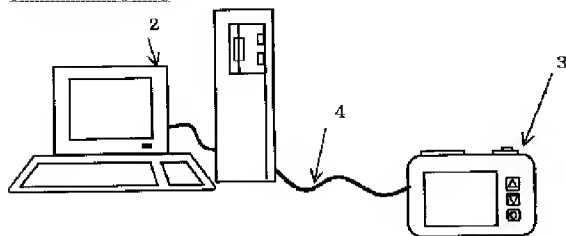
20 is an image database display screen.

## [Drawing 1]

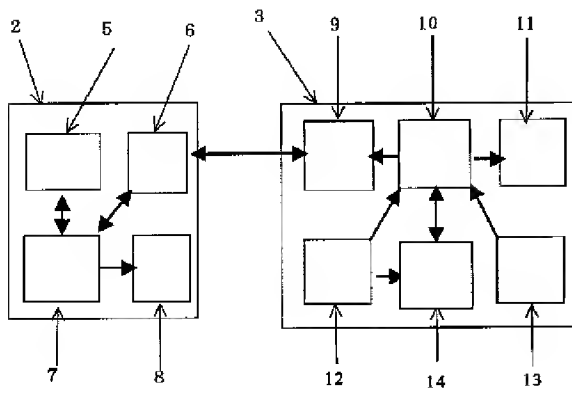
1

項目	内容
工事名称	県道〇〇号新設工事
工事箇所	△△市□□町
発注者	〇〇県土木部
施工者	XX建設株式会社
工種	コンクリート工
種別	擁壁
撮影箇所(測点)	NO.5 + 1. 5m
撮影日	1999. 05. 31
略図ファイル名	擁壁1. JPG
設計値H	5. 30
実測値H	
設計値L	1. 20
実測値L	
画像ファイル名	

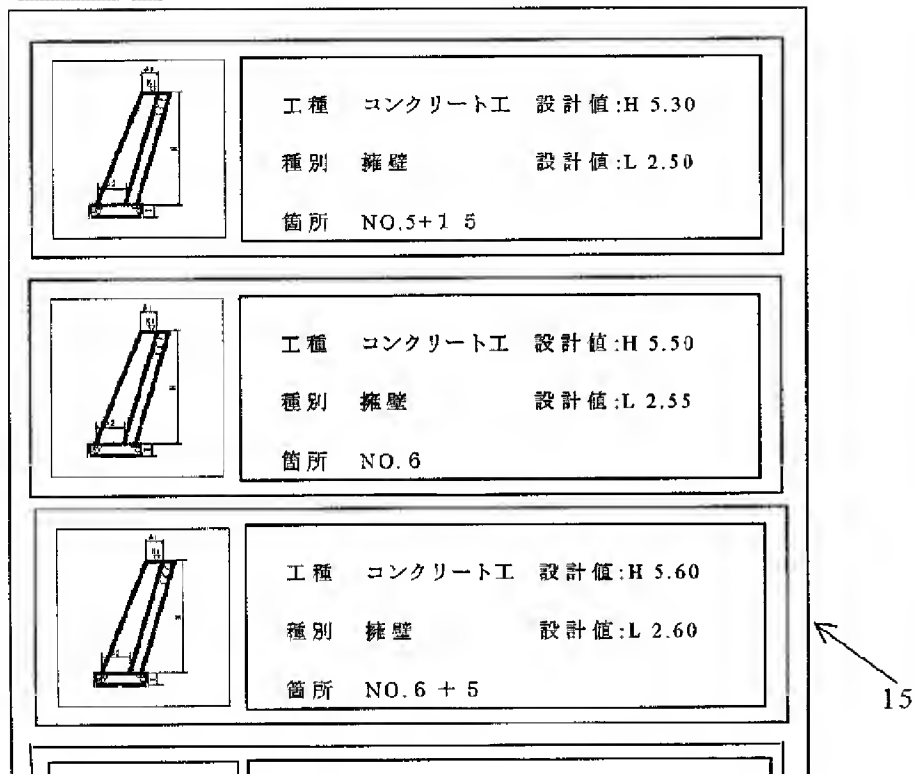
## [Drawing 2]



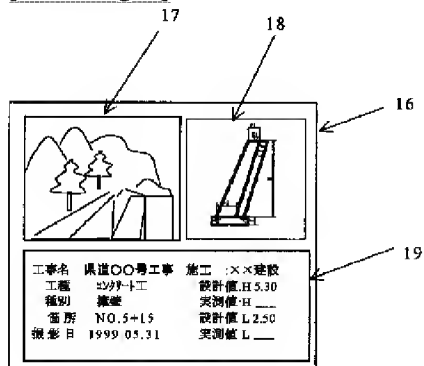
## [Drawing 3]



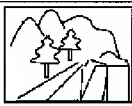




[Drawing 4]



[Drawing 5]



[Drawing 6]

	工事名 県道○○号工 工事 道路工 種別 一般 箇所 NO.3+15	施工 :X×建設 設計値:H 5.30 実測値:H 5.29 設計値:L 2.50 実測値:L 2.48	
	工事名 県道○○号工 工事 道路工 種別 一般 箇所 NO.6	施工 :X×建設 設計値:H 5.50 実測値:H 5.51 設計値:L 2.55 実測値:L 2.53	
	工事名 県道○○号工 工事 道路工 種別 一般 箇所 NO.6+5	施工 :X×建設 設計値:H 5.60 実測値:H 5.58 設計値:L 2.60 実測値:L 2.59	

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[Translation done.]